

**ABSTRACT**

Methods and apparatus for conducting differential cell counts including leukocytes and use of optical bio-discs for performing such cell counts is disclosed. The bio-disc includes a substantially circular substrate having a center and an outer edge, an active layer associated with the substrate; a target zone disposed between the center and the outer edge; and a plurality of capture antibodies bound to the active layer such that the antibodies are immobilized on the active layer in the target zone.